

Course: Coding in Math I Module: Categorizing Triangles



Lesson 1.1: Calculating Area

<https://codehs.com/course/13419/lesson/1.1>

Description	Students will learn about functions and parameters, and take an in-depth look at a function that prints text to the screen. They will write an equation to calculate area of a triangle and use a function to print the area value to the screen.
Objective	<p>Students will be able to:</p> <ul style="list-style-type: none"> • Use functions, parameters, and variables to calculate area of a triangle • Print the calculated area to the screen
Activities	<p>1.1.1 Video: Calculating Area 1.1.2 Check for Understanding: Calculating Area 1.1.3 Example: Drawing a Custom Triangle 1.1.4 Exercise: Calculate the Area</p>
Prior Knowledge	<ul style="list-style-type: none"> • Familiarity with the x and y coordinate plane • Area of a triangle • Basic algebra – using an area formula with variables.
Planning Notes	<ul style="list-style-type: none"> • Decide if students will take notes in a notebook, on paper handouts, or through the “Take Notes” function on CodeHS. • Determine how far you expect students to get in this class period in order to set expectations. You may think that one lesson is enough or may tell students to complete the entire 3-lesson activity in one sitting. • You may want to watch the video together as a class and then lead a discussion about the important topics covered.
Standards Addressed	
Teaching and Learning Strategies	<p>Lesson Opener:</p> <ul style="list-style-type: none"> • Use the discussion questions to explore preconceptions of coding, variables, and the area of triangles.

- This is a great chance to see what students already know, or think they know!

Activities:

- Watch the Calculating Area video as a class or independently. Have students take notes about the major terms and concepts presented in the video. [5 mins]
- Have students complete Calculating Area check for understanding quiz independently. [5 mins]
- Talk through the example together as a class. [10 mins]
 - Based on what they learned in the video, talk through the different parts of the program.
 - Try changing some of the values in the functions to see how it alters the program. Have them predict the outcome before running it.
 - Since this is their first time in the Editor, remind them / ask them about how to do things (eg Run the program, look at description, look in DOCS, etc).
- Complete *Calculate the Area* exercise independently or in pairs. [8-10 mins]
 - You may need to help point them toward the function on line 76. This is where they will be adding code to complete the exercise.

Lesson Closer:

- Use the end of class discussion questions in this lesson to review what students learned in this lesson.
 - When students talk about the errors they made, try to normalize them! They are not bad programmers if they make errors. Even professionals will make simple errors in complex programs. They should almost expect the program not to work the first time they click Run.

Discussion Questions**Beginning of Class:**

- What is coding? Have you done any coding before?
 - *Answers may vary. This is a chance to see what students perceive “coding” to be. Essentially coding is giving commands to a computer to follow.*
- What is a variable in math? Can you think of a formula with variables in it?
 - *Answers may vary. Variables in math are placeholders for numbers or quantities. Example would be $\text{Area} = \text{length} \times \text{width}$, with “length” and “width” being variables.*
- A friend asks you to calculate the area of a triangle. What information do you need from them to do this?
 - *You would need to know the length of the base and the height, and the triangle area formula.*

End of Class:

- What is a function?
 - *A way to teach the computer new words or commands*
- What is a parameter? Why are they used?
 - *An input given to a function. We use parameters to customize a function's commands.*
- What is a variable?
 - *A variable is used to store values for future use in a program. It has a name and value associated with it.*
- What do you do when you receive an error message?
 - *Answers may vary. Ideas include: check for typos, reread the description.*
- Did you find the first exercise to be difficult or easy? Why? What specifically was easy or hard?
 - *Answers may vary.*
- What type of mistakes did you find yourself making?
 - *Answers may vary. Ideas include: forgetting a colon, spelling typo, capitalization typo, not using correct parameter name.*

Resources/Handouts

Vocabulary

Term	Definition	
Modification: Advanced	Modification: Special Education	Modification: English Language Learners